WHAT IS CLAIMED IS:

1. A communication system for implementing an overall communication policy comprising:

a first interface for accepting a first plurality of separate communication links forming a first trunked communication link;

a second communication interface for accepting a second plurality of separate communication links forming a second trunked communication link; and

a plurality of processors, each coupled to a corresponding different one of the first plurality of separate communication links and coupled to a corresponding different one of the second plurality of communication links, and coupled to one another over a communication channel;

wherein each processor in the plurality of processors is configured to implement a separate communication policy for data passing between the first trunked communication link and a corresponding one of the second plurality of communication links such that together the separate communication policies approximate the overall communication policy, and wherein the plurality of processors are further configured to communicate among one another to adjust the separate communication policies to adapt to data flows passing through the processors.

2. The system of claim 1, wherein adapting to data flows includes a first processor in the plurality of processors borrowing bandwidth from a second processor in the plurality of processors.

3. The system of claim 1, wherein each processor in the plurality of processors has a copy of each communication policy in the communication system and communicates with the other processors in the plurality of processors to keep state information current for each such copy.

4. The system of claim 3, wherein the plurality of processors is divided into a plurality of active processors and a plurality of standby processors, such that each processor in the plurality of active processors actively implements a communication policy on data, while a standby processor in the plurality of standby processors monitors the plurality of active

processors for a failure on an active processor, and upon detecting the failure the standby processor joins the plurality of active processors, thus implementing the overall communication policy.

5. The system of claim 1, wherein each processor in the plurality of processors mirrors state information for reporting across the communication system.

6. The system of claim 1, wherein each processor in the plurality of processors mirrors state information for management across the communication system.

7. The system of claim 1, wherein the overall communication policy is only implemented for traffic traveling from the first interface to the second communication interface.

8. The system of claim 1, wherein the overall communication policy is implemented for traffic traveling between the first interface and the second communication interface in either direction.

9. A communication system for implementing a communication policy comprising:

a first communication link;

a second communication link;

a first processor coupled to the first and second communication links, configured to implement the communication policy for data passing between the first communication link and the second communication link; and

a second processor coupled to the first and second communication links, the second processor in communication with the first processor to maintain a mirror configuration on the second processor to implement the communication policy in a standby status relative to the first processor;

wherein the first processor implements the communication policy until the second processor detects a failure in the first processor, at which time the second processor implements the communication policy.

10. The system of claim 9, wherein, in response to the failure in the first processor, the first processor places itself in a standby status relative to the second processor.

11. A communication system for implementing an overall communication policy comprising:

a first communication link;

a second communication link;

a plurality of processors, each processor in the plurality of processors configured to implement the communication policy for data passing between the first communication link and the second communication link;

a first plurality of aggregator/disaggregator network devices arranged between the plurality of processors and the first communication link;

a second plurality of aggregator/disaggregator network devices arranged between the plurality of processors and the second communication link;

a first mesh, including a plurality of network links such that a link in the plurality of network links exists to join each processor in the plurality of processors to each aggregator/disaggregator in the first plurality of aggregator/disaggregator network devices; and

a second mesh, including a plurality of network links such that a link in the plurality of network links exists to join each processor in the plurality of processors to each aggregator/disaggregator in the second plurality of aggregator/disaggregator network devices;

wherein each processor in the plurality of processors is configured to implement a separate communication policy for data passing between the first communication link via a first aggregator/disaggregator in the first plurality of aggregator/disaggregator network devices and the second communication link via a corresponding one of the second plurality of aggregator/disaggregator network devices, such that together the separate quality-of-service policies approximate the overall communication policy, and wherein the plurality of processors are further configured to communicate among one another to adjust the separate communication policies to adapt to data flows passing through the processors.

12. The system of claim 11, wherein each processor in the plurality of processors has a copy of each communication policy in the communication system and communicates with the other processors in the plurality of processors to keep state information current for each such copy.

13. The system of claim 12, wherein the plurality of processors is divided into a plurality of active processors and a plurality of standby processors, such that each processor in the plurality of active processors actively implements a communication policy on data, while a standby processor in the plurality of standby processors monitors the plurality of active processors for a failure on an active processor, and upon detecting the failure the standby processor joins the plurality of active processors, implementing a communication policy on data previously associated with the active processor.

14. A computer-based method for scheduling network packet traffic for transmission according to a class-based queuing hierarchy, comprising:

creating a matrix having a fixed size, one dimension of the matrix representing a plurality of class priorities, another dimension of the matrix representing a plurality of levels corresponding to levels of the hierarchy, and cells in the matrix including collections of references to nodes in the hierarchy;

accepting a collection of class-based queues containing a plurality of packets awaiting transmission;

scheduling for transmission a next packet among the plurality of packets, the scheduling including searching cells of the matrix for a reference to a next class in the hierarchy, the next class being associated with the next packet, such that the worst-case time of the searching is bounded by a finite time dependent on the fixed size of the matrix.